

NOT TO BE TAKEN AWAY.

ANNUAL STATISTICAL RETURNS
AND
SHORT NOTES ON VACCINATION
IN
BIHAR AND ORISSA

FOR THE YEAR

1917-1918

BY

W. C. ROSS, MAJOR, D.P.H., I.M.S.,
Sanitary Commissioner, Bihar & Orissa.

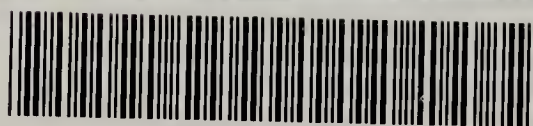


PATNA

PRINTED BY THE SUPERINTENDENT, GOVERNMENT PRINTING, BIHAR AND ORISSA
1918

[Price—Indian, 8 annas ; English, 8d.]

WELLCOME
LIBRARY
+
Ann Rep
QW28
J14
B54
1917-18



22501899363



BIHAR AND ORISSA

BOOK DEPÔT.

Gulzarbagh :

PATNA.



Forwarded by the order of

HIS HONOUR = =

THE LIEUTENANT-GOVERNOR

IN COUNCIL. = = =



Digitized by the Internet Archive
in 2019 with funding from
Wellcome Library

<https://archive.org/details/b31496404>

ANNUAL STATISTICAL RETURNS
AND
SHORT NOTES ON VACCINATION
IN
BIHAR AND ORISSA

FOR THE YEAR
1917-1918

BY
W. C. ROSS, MAJOR, D.P.H., I.M.S.,
Sanitary Commissioner, Bihar & Orissa.



PATNA

PRINTED BY THE SUPERINTENDENT, GOVERNMENT PRINTING, BIHAR AND ORISSA
1918

[*Price—Indian, 8 annas ; English, 8d.*]

Agents for the Sale of Books published by the Bihar and Orissa Government.

Agents in India

- | | |
|--|--|
| (1) Messrs. Thacker, Spink & Co., Calcutta. | (8) Messrs. M. C. Sircar & Sons, 75, Harrison Road, Calcutta. |
| (2) Messrs. W. Newman & Co., Calcutta. | (9) Proprietor of the Newal Kishore Press, Lucknow. |
| (3) Messrs. S. K. Lahiri & Co., College Street, Calcutta. | (10) Messrs. M. N. Burman & Co., Bankipur. |
| (4) Messrs. A. M. and J. Ferguson, Ceylon. | (11) Babu Ram Dayal Agarwala, 184 Katra Road, Allahabad. |
| (5) Messrs. R. Cambray & Co., 6 and 8-2, Hastings Street, Calcutta. | (12) Standard Literature Co., Ltd. 13/1, Old Court House Street, Calcutta. |
| (6) Messrs. Thompson & Co., Madras. | (13) Manager of the Indian School Supply Depot, 309, Bow Bazar Street, Calcutta. |
| (7) Messrs. D. B. Taraporevala, Sons & Co., 103, Meadow Street, Fort, Post Box No. 18, Bombay. | (14) Messrs. Butterworth & Co., Ltd., 6, Hastings Street, Calcutta. |
- (15) Messrs. Ram Krishna and Sons, Anarkali Street, Lahore.

Agents in England :

- | | |
|---|--|
| (1) Messrs. A Constable & Co., Ltd., 10, Orange Street, Leicester Square, London, W. | (7) Messrs. Henry S. King & Co., 65, Cornhill London, E. C. |
| (2) Messrs. Kegan, Paul, Trench, Trubner & Co., 68, Carter Lane, London, E. C. (Oriental Department) and 25, Museum Street, London, W. C. | (8) Messrs. Grindlay & Co., 54, Parliament Street, London, S. W. |
| (3) Mr. B. Quaritch, 11, Grafton Street, New Bond Street, London, W. | (9) Messrs. W. Thacker & Co., 2, Creed Lane, Ludgate Hill, London, E. C. |
| (4) Messrs. P. S. King & Son, 2 and 4 Great Smith Street, Westminster, London, S. W. | (10) Messrs. Luzac & Co., 46, Great Russell Street, London, W. C. |
| (5) Mr. B. H. Blackwell, 50-51, Broad Street, Oxford. | (11) Messrs. Oliver and Boyd, Tweeddale Court, Edinburgh. |
| (6) Messrs. Deighton Bell & Co., Ltd., Trinity Street, Cambridge. | (12) Messrs. E. Ponsonby, Ltd., 116, Grafton Street, Dublin. |

- (13) T. Fisher Unwin, Ltd., 1, Adelphi Terrace, London, W. C.

Agents on the Continent :

- | | |
|---|---|
| (1) M. Ernest Leroux, 28, Rue Bonaparte, Paris, France. | (2) Martinus Nijhoff, The Hague, Holland. |
|---|---|

ANNUAL VACCINATION REPORT BIHAR AND ORISSA for the year 1917-18.

1. Staff.--Major W. C. Ross, I.M.S., was in charge of the Department throughout the year under report.

The circles of the Deputy Sanitary Commissioners were rearranged at the beginning of the year with headquarters at Muzaffarpur, Patna, and Namkum (Ranchi). The office of the Deputy Sanitary Commissioner, North Bihar Circle, was held by Dr. B. P. Mazumdar throughout the year, and Dr. T. Sebastian remained in charge of the Chota Nagpur and Orissa Circle, and in supervising charge of the Vaccine Depôt during the year. Dr. R. C. Roy held charge of the South Bihar Circle from 1st to 30th April, and Dr. S. Maitra was in charge for the remainder of the year.

The inspecting staff consisted of 20 District Inspectors of Vaccination and 66 Sub-Inspectors of Vaccination (including 3 deputed for duty at the Vaccine Depôt) in addition to the 2 Sub-Assistant Surgeons combining vaccination inspection with other duties in Angul. During the year one additional appointment to the cadre was sanctioned in order to provide a Sub-Inspector for the new Khondmal Subdivision in Angul, to replace the Sub-Assistant Surgeon who had previously done the work in addition to his other duties.

The total numbers of vaccinators employed in the Province during the year were 1,049 licensed and 202 paid, against 1,086 licensed and 207 paid in the previous year.

In Municipalities and in the districts of Puri, Angul, Sambalpur, and part of Singhbhum, vaccination was done by paid vaccinators; but otherwise the work throughout the Province was carried out under the licensing system except for the employment of paid vaccinators for short periods to deal with outbreaks of small-pox.

2. Operations performed.--The total number of operations performed during the year amounted to 1,097,676 as compared with 1,090,434 last year. The increase amounts to 7,242 which is in my opinion satisfactory in consideration of the wide prevalence of plague, cholera, fever, and other diseases during the year, which was an unusually unhealthy one.

Of the total number of operations, 1,034,931 were performed by the Vaccination Department as compared with 1,072,081 last year: 1,055,374 operations were primary and the remaining 28,657 were revaccinations as against 1,039,575 primary and 32,506 revaccinations last year.

There was an increase of 15,799 in the primary operations and a decrease of 3,849 in the revaccinations during the year. Of the total operations performed (1,084,031), 1,061,531 equal to 97.92 per cent. were successful as compared with 1,042,865 equal to 97.27 per cent. last year. The number of operations performed in municipalities fell by 1,053 as compared with last year's returns. The ratios of success in municipalities were 96.23 for primary and 69.12 for revaccination as compared with 98.98 for primary and 61.11 for revaccination in rural areas.

3. Vaccination in Districts.--During the year under report, vaccination has been successfully carried out in the Patna Division, from all the districts of which an increase is reported in the number of operations performed, viz., Gaya

(6,259), Patna (364), and Shahabad (267). In view of the disastrous floods, the serious epidemics of cholera and plague, and the disturbances caused by riots in this division during the year, these results are very satisfactory.

In the two districts of Saran and Champaran the number of operations was slightly increased, but small decreases were recorded in the districts of Muzaffarpur and Darbhanga. As a whole, the work in the Tirhut Division is in a satisfactory state.

The Bhagalpur Division shows an increase of 6,659 operations this year, as compared with the large decrease reported last year. The Santal Parganas show an increase of 9,520 and Monghyr of 1,120 whilst Bhagalpur and Purnea districts return decreases of 3,462 and 519 respectively.

The Orissa Division on the other hand shows a very large decrease and the Cuttack district again heads the list with another large drop of 10,922 in the number of operations performed. The district of Angul also returns a decrease of 4,043 whilst the other districts, viz., Balasore, Puri and Sambalpur show increases of 2,681, 5,527 and 2,809 respectively.

The Chota Nagpur Division returns show small increases in the districts of Ranchi, Manbhum, Palamau and Singhbhum and a decrease in the district of Hazaribagh. The decrease in Hazaribagh was due to the wide-spread prevalence of cholera and to the difficulty of getting the staff started to work before December.

4. Vaccination in towns and compulsory areas.—During the year under report the Vaccination Acts were extended to certain mauzas in thanas Ghatsila and Sakchi in Singhbhum. Statement VII shows that during the year 20,786 children, under one year of age, out of an available number of 30,083 or 69·09 per cent., were successfully vaccinated.

The towns of Bhagalpur (again) and Darbhanga (again) show the smallest proportion of work done and the towns of Patna, Chapra, Monghyr, Balasore and Daltonganj have also given unsatisfactory returns.

5. Work done in the Native States under the supervision of the Political Agent.—Vaccination work in the Orissa Feudatory States has steadily developed during recent years under the direction and encouragement of the Political Agent.

The following tabulated statement shows the results for the last twelve years :—

Year.					Total number of vaccinations.	Total number of revaccinations.
1					2	3
1906-07	...	...	...	...	165,967	43,498
1907-08	...	...	...	...	187,150	69,685
1908-09	...	...	...	...	226,042	97,078
1909-10	...	...	...	...	269,728	142,911
1910-11	...	...	...	...	310,962	163,162
1911-12	...	...	...	...	341,701	179,688
1912-13	...	...	...	...	387,190	215,438
1913-14	...	...	...	...	430,720	261,225
1914-15	...	...	...	...	419,562	260,707
1915-16	...	...	...	...	454,699	281,913
1916-17	...	...	...	...	504,948	311,670
1917-18	...	...	...	...	526,410	330,938

The figures above quoted speak for themselves and are a very satisfactory record of the work done to stamp out and prevent small-pox in these States. Both vaccination and to a large extent revaccination are practically compulsory in the majority of these States; and both the record and the results of the work are eminently satisfactory.

6. Protection of Infants.—During last year out of 1,119,606 the estimated number of children under one year available for vaccination 499,705, equal to 446 per thousand, were successfully vaccinated as compared with 492,588 or 468 per thousand in the previous year. The protection of infants in municipalities is separately shown in statement VII and works out at a ratio of 690 per thousand of the surviving infant population.

These figures are very unsatisfactory as they show that more than half the total number of operations are performed on children over one year of age. Whilst the ratio of protected children under one year of age has fallen to below 500 per thousand, the total number of operations performed is still in excess of the total number of infants available as it always has been. In previous years the excess has been very marked, and as there has been a constant excess it must be inferred that the returns are to that extent on the average fictitious.

Civil Surgeons and Deputy Sanitary Commissioners are unanimous in attributing the opposition to vaccination to be concerned more with the age of the child than with the operation itself, and, in view of the strong popular prejudice which exists against vaccination of infants at an early age, I consider that it is desirable that the Vaccination Act should be amended so as to raise the age for compulsory vaccination to one year instead of six months.

7. Incidence and mortality of small-pox.—During the last ten years the total number of deaths from small-pox in the districts of this province has been 98,155 from which it may be inferred that over 600,000 cases of the disease occurred in that period.

During the first quinquennium the number of deaths was 53,772 and during the second 44,383. In the last quinquennium the mortality was as follows:—4,347, 8,979, 14,628, 9,742 and 6,687.

The provincial ratios of the mortality from small-pox per 1,000 of population during the last five years have been .11, .22, .42, .28, and .19 respectively.

8. Prevention of small-pox.—The constant and considerable mortality noted in the preceding paragraph is in my opinion a complete demonstration both of the insufficiency and of the inefficiency of the existing arrangements for vaccination.

It is well known—in fact it is an admitted axiom—that thorough vaccination can and does stamp out small-pox altogether and in the light of that knowledge, and in face of the above facts, there is great necessity for a more definite vaccination policy.

The inefficiency of the Department is being severely dealt with and action has been taken against a large number of officers. The departmental rules and regulations are being strictly enforced and the staff generally has been warned against laziness, neglect of duty and breach of rules. The results of two years' work in this direction are now beginning to make themselves apparent.

At the same time I do not consider that small-pox can be effectively dealt with and stamped out unless vaccination is made compulsory throughout the Province, and I would recommend that the Vaccination Act should be modified so as to extend the age, within which vaccination is required, to one year, and should be generally enforced; that vaccination should be free; and that the vaccination staff in all the districts should be put on one consolidated provincial cadre for purposes of administration and work.

9. Inspection of work.—During the year under report the three Deputy Sanitary Commissioners inspected 155,456 primary vaccinations as against

210,920 in the previous year. The decrease in the number of operations inspected is due to the more detailed and systematic manner in which the work is now inspected and checked, by comparing inspecting officers' diaries and reports and examining vaccinators' registers in the villages and verifying a number of the entries. The inspecting work done during the year by the Deputy Sanitary Commissioners has been very comprehensive, and they have submitted valuable reports on the efficiency of the staff and the arrangements in twenty of the twenty-one districts in the province. Action has been taken on these reports in each case.

The Civil Surgeons of the province have inspected during the year 65,694 primary and 6,385 revaccination operations against 67,096 primary operations and 6,263 revaccinations last year. It should be noted that the methods of inspection of Civil Surgeons and Deputy Sanitary Commissioners are different. Civil Surgeons inspect the new work which has just been done and the numbers returned by them are therefore smaller, whereas Deputy Sanitary Commissioners inspect all the children under ten years of age, and look at old work as well as new work, and also look for unvaccinated children and children who are marked with small-pox, and they also examine vaccinators' registers and other records in the villages where they can be verified and checked.

10. The officers of the Inspecting staff.—The officers of the Inspecting staff have not yet attained to a very satisfactory standard of efficiency. A few of them are energetic and capable, and these men have been rapidly promoted and put in the most responsible positions. The majority, however, are careless and negligent and do not attempt to carry out their duties honestly and efficiently. The standing rules of the Department and recent orders have been enforced with considerable stringency in order to imbue the staff with some sense of discipline. As that object does not appear to have been sufficiently attained, the process at present continues, and a large number of inspecting officers have been punished during the last year under report. At the end of the last three working seasons a list of the punishments and promotions has been circulated for general information amongst the members of the staff.

I am glad to be able to report that there has been in my opinion a definite improvement in the discipline and energy of the staff, but it has been somewhat slow and there is still much room for further improvement.

11. Supply of vaccine.—The Vaccine Dépôt at Namkum supplied the province with vaccine throughout the year. A large reserve supply has been accumulated, and the necessary stores and supplies for manufacture and dispatching are in ample stock.

The vaccine supply of the province is now assured and the dépôt could without much difficulty, supply any other province with any quantity of vaccine up to 2,000,000 doses on an emergency.

The following tabulated statement shows the number of doses manufactured, the number of doses issued, the number of doses lost in storage and manufacture, and the number of doses in reserve, for four years :—

Year.	No. of doses manufactured.	No. of doses issued.	No. of doses lost in storage and manufacture.	No. of doses in reserve.
1	2	3	4	5
1914-15	771,696	541,259	...	230,437
1915-16	3,127,290	1,798,230	...	1,559,488
1916-17	2,842,710	2,017,730	679,294	1,705,174
1917-18	3,778,318	2,250,072	100,306	3,133,114

The number of calves required has been greatly reduced by improvements in the technique of operating and by the better feeding of calves, and the working costs have therefore been considerably reduced.

The following tabulated statement shows the numbers of calves purchased or hired, the numbers of doses manufactured, the average numbers of doses yielded per calf, the total gross cost and the total revenue and the average net cost per dose for four years :—

Year.	No. of calves purchased or hired.	No. of doses manufactured.	Average No. of doses yielded per calf.	Total gross cost.	Total revenue.	Average net cost per dose.
1	2	3	4	5	6	7
				Rs.	Rs.	Pies.
1914-15	507	771,696	1522.08	19,367	...	4.8
1915-16	1,267	3,127,290	2468.26	34,537	4,637	1.6
1916-17	1,129	2,842,710	2517.90	34,936	13,518	1.4
1917-18	886	3,778,318	4264.46	22,183	16,610	.28

The working cost of the Department for the year amounted to Rs. 22,183-0-11 against Rs. 34,936-14-6 in previous year.

There was thus a large saving in spite of the greatly increased cost of glycerine, lanoline, kerosine, and packing materials owing to the war.

An epidemic of foot-and-mouth disease again stopped the work of the depôt temporarily last year, but the output of vaccine has been ample. The chief loss from such epidemics arises from the loss of calves and of vaccine in the making, as the sick calves have to be discarded.

This loss, together with the loss of calves from accidents and other causes greatly diminishes the apparent output per calf, which has really been greatly increased by improved feeding and technique, and is actually about 5,000 doses per calf kept and used.

The system of direct fortnightly issues to vaccinators has been continued. The cost to the Depôt is greater, as the number of postal packages is larger ; but the results are good. There is no loss of time or of the freshness of the vaccine, and there is really an ultimate saving owing to the packages being posted only once, instead of issuing to Civil Surgeons, and being reposted by them.

12. Experimental work.—Further experimental work was carried out at the Depôt during the year with some very interesting results. Last year it was demonstrated that glycerine vaccine was the most stable preparation for withstanding the vicissitudes of high temperature and travelling. This year we have compared the stability of vaccines which were respectively slightly acid, slightly alkaline and neutral and also of vaccines which were prepared with distilled water, boiled water and normal saline solution, and we have found that neutral vaccine is the most stable and that distilled water is a much better diluent than either boiled water or normal saline solution.

Another series of experiments has demonstrated that glycerine vaccine, which is neutral in reaction to begin with, becomes acid slowly in cold store and rapidly becomes acid when exposed to room temperature. As we have already proved that acid vaccines are not stable, the result of this experiment supplies us with the explanation why vaccine deteriorates rapidly after issue, and becomes inert in from ten to twenty days according to temperature. It is really a question of acidity which is presumably produced by the living virus in the vaccine.

Another experiment showed that the bacterial content of the vaccine as shewn by plate cultures diminished much more rapidly when the vaccine was kept at room temperature than when it was kept in cold storage. This is also presumably due to the more rapid production of acid at the higher temperature which, while it reduces the number of extraneous organism

also makes the vaccine rapidly inert: this experiment demonstrates the necessity for the prolonged storage of vaccine at a low temperature before it is issued or used.

Another experiment proved that exposure to bright sun light causes rapid deterioration of the vaccine, and justifies the change of packing from capillary glass tubes to collapsible metal tubes for that reason as well as for the greater convenience.

The feeding experiments, which were carried out during the year, definitely proved that a 50 % increase in the calf's ration produced nearly a 50 % increase in the vaccine production, but a further increase gave bad results owing to the indigestion and diarrhoea caused by over-feeding. The rations have therefore been standardized at the 50% increase with very satisfactory results.

Further experiments were also carried out in the manufacture and packing of the vaccine with a view to getting a better product which would keep better and would be easier to pack and handle. Some improvements have already been introduced but final results have not yet been obtained in this direction.

13. Cost of the Department.—The total cost of the Vaccination Department (not including the Vaccine Depot) during the year as detailed in Statement II was Rs. 1,12,216 or Rs. 2, 552 in excess of the previous year.

The cost per successful operation was 0-1-8 against 0-1-8 in the previous year.

The increase was due to the introduction of free vaccination in Angul, which increased the cost of the work in that district alone by Rs. 2,802 which more than accounts for the total increase of cost in the province.

14. General.—In general better results have been obtained during the year under report: the discipline and work of the staff have been somewhat more satisfactory, except in Orissa, and the number of operations performed has slightly increased in spite of the adverse factors of the prolonged rains, the lateness of the Puja holidays, and the prevalence of cholera and fevers, which combined to prevent the work being properly begun until well into November, and the riots and the prevalence of plague in Bihar which seriously affected the work throughout the season. I think it unlikely that so many adverse factors can operate again next year, and I, therefore, anticipate a considerable improvement in the returns next year.

In order to avoid any risk of interference with the work owing to short supplies of vaccine, I propose to still further increase the quantity of vaccine issued in the coming year; and I hope for greater co-operation and energy on the part of the inspecting staff, and better results in the quality and quantity of work done.

In conclusion, I desire to bring to the notice of Government the large amount of useful work done by the three Deputy Sanitary Commissioners during the year in inspecting vaccination work and reporting on the efficiency of the staff and work in almost all the districts of the Province.

W. C. ROSS, MAJOR, D.P.H., I.M.S.,
Sanitary Commissioner.

STATEMENTS.

Statement No. I.—Showing particulars of Vaccination in the

Number.	District.		Population of district according to the census of 1911.	Average population per square mile.	Average number of vaccinators employed throughout the season.	Total number of persons vaccinated,			Average number of persons vaccinated by each vaccinator.	Total.
						Male.	Female.	Total.		
1	2		3	4	5	6			7	8
Patna Division.										
1	Patna	... { By paid Vaccinators ... By licensed Vaccinators ... }	1,609,631	777	{ 15 61	6,191 29,054	5,537 27,859	11,728 56,913	781 933	11,637 56,910
2	Gaya	... { By paid Vaccinators ... By licensed Vaccinators ... }	2,161,010	458	{ 8 88	2,104 29,237	1,592 29,016	3,696 58,253	462 662	3,106 58,247
3	Shahabad	... { By paid Vaccinators ... By licensed Vaccinators ... }	1,865,660	426	{ 17 76	5,266 23,443	3,157 20,202	8,423 43,645	495 574	6,795 43,641
Total of Patna Division		{ By paid Vaccinators ... By licensed Vaccinators ... }	5,636,301	505	{ 40 225	13,561 81,734	10,286 77,077	23,847 158,811	596 705	21,538 158,798
Tirhut Division.										
4	Saran	... { By paid Vaccinators ... By licensed Vaccinators ... }	2,289,778	853	{ 5 87	1,135 39,944	1,138 36,645	2,273 76,589	454 880	2,269 76,589
5	Champan	... { By paid Vaccinators ... By licensed Vaccinators ... }	1,908,385	540	{ 4 71	1,020 25,475	977 24,110	1,997 49,585	499 698	1,993 49,553
6	Muzaffarpur	... { By paid Vaccinators ... By licensed Vaccinators ... }	2,845,514	937	{ 12 75	2,558 41,588	2,416 39,721	4,974 81,309	414 1,084	4,702 81,293
7	Darbhanga	... { By paid Vaccinators ... By licensed Vaccinators ... }	2,929,682	875	{ 7 88	1,035 46,860	971 44,404	2,006 91,264	286 1,037	1,969 91,221
Total of Tirhut Division		{ By paid Vaccinators ... By licensed Vaccinators ... }	9,973,359	791	{ 28 321	5,748 153,867	5,502 144,880	11,250 298,747	401 930	10,933 298,656
Bhagalpur Division.										
8	Monghyr	... { By paid Vaccinators ... By licensed Vaccinators ... }	2,131,381	543	{ 7 30	1,666 33,313	1,464 32,107	3,130 65,420	447 2,180	2,924 65,417
9	Bhagalpur	... { By paid Vaccinators ... By licensed Vaccinators ... }	2,139,318	506	{ 12 63	1,559 32,288	1,260 31,102	2,819 63,390	235 1,006	2,581 63,371
10	Purnea	... { By paid Vaccinators ... By licensed Vaccinators ... }	1,989,637	398	{ 11 52	4,534 25,007	2,753 21,232	7,287 46,239	662 889	1,931 42,907
11	Santal Parganas	... { By paid Vaccinators ... By licensed Vaccinators ... }	1,882,781	344	{ 6 64	865 28,268	808 26,995	1,673 55,263	279 863	1,568 54,881
Total of Bhagalpur Division.		{ By paid Vaccinators ... By licensed Vaccinators ... }	8,143,117	437	{ 36 209	8,624 118,876	6,285 111,436	14,909 230,312	414 1,102	9,004 226,576
Orissa Division.										
12	Cuttack	... { By paid Vaccinators ... By licensed Vaccinators ... }	2,109,139	577	{ 11 69	3,689 31,212	2,751 28,491	6,440 59,703	585 865	4,160 57,048
13	Balasore	... { By paid Vaccinators ... By licensed Vaccinators ... }	1,055,568	506	{ 4 37	744 13,097	545 12,456	1,289 25,553	322 690	1,013 21,910
14	Angul	... By paid Vaccinators ...	199,405	118	12	4,478	3,635	8,113	676	5,766
15	Puri	... By paid Vaccinators ...	1,023,402	409	29	19,535	16,875	36,410	1,255	35,878
16	Sambalpur	... By paid Vaccinators ...	744,193	194	13	12,807	12,415	25,222	1,940	24,719
Total of Orissa Division		{ By paid Vaccinators ... By licensed Vaccinators ... }	5,131,707	373	{ 69 106	41,253 44,309	36,221 40,947	77,474 85,256	1,079 804	71,536 78,958

districts of Bihar and Orissa during the year 1917-18.

Primary Vaccination.				Re-vaccination.			Percentage of successful cases in which the results were known.		Persons successfully vaccinated per 1,000 of population.	Percentage of unknown cases to total cases.		Average annual number of persons successfully vaccinated during previous five years.		Average annual number of deaths from small-pox during previous five years.					
Successful				Total.	Successful.	Unknown.	Primary.	Re-vaccination.		Primary.	Re-vaccination.	Number.	Ratio per 1,000 of population.	Number.	Ratio per 1,000 of population.				
Under one year.	One year and under six years.	Total of all ages.	Unknown.																
9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24				
5,807	5,124	11,111	235	91	38	1	97.44	42.22	42.57	2.11	1.09	58,244	36.12	562	.35				
25,047	30,515	56,436	183	3	3	...	99.48	100.		.32	...								
1,717	1,334	3,068	21	590	528	25	99.44	95.22		.67	4.22					65,330	30.23	621	.28
22,394	34,912	57,877	105	6	...	...	99.54	...		.18	...				
4,180	2,215	6,673	15	1,628	1,545	6	98.42	95.25		.22	.36									55,063	29.51	438	.23
17,779	22,485	43,416	16	4	...	4	99.52	...	.03	100.							
11,704	8,673	20,852	271	2,309	2,121	32	98.04	93.14	32.40	1.26	1.38	178,637	31.69	1,621	.28				
65,220	87,912	157,729	304	13	3	4	99.51	33.33		.19	30.78								
1,235	861	2,096	66	4	2	...	95.14	50.00	33.94	2.98	...	86,214	37.65	292	.12				
30,821	44,285	75,106	965	...	...	...	99.81	...		1.26	...					
1,087	869	1,970	6	4	...	2	99.1430	.50					57,380	29.32	182	.09
22,327	26,740	49,431	34	32	26	1	99.82	83.87		.06	3.12								
2,484	2,033	4,553	44	272	136	37	97.74	57.87		.93	13.60									90,977	31.97	341	.11
29,790	50,870	80,878	24	16	6	...	99.51	37.50	.03	...									
1,101	839	1,942	5	37	12	...	98.80	32.43	.25	...	95,118	32.46	614	.20					
46,257	44,592	90,974	17	43	20	...	99.74	46.51	.01	...									
5,907	4,602	10,561	121	317	150	39	97.67	53.95	30.94	1.10	12.30	329,699	33.05	1,429	.14				
129,195	166,487	293,289	1,040	91	52	1	99.58	57.77		.34	1.09								
1,412	1,415	2,861	27	206	92	...	99.13	44.66	32.05	.92	...	79,385	36.75	754	.35				
18,234	47,097	65,406	5	3	2	...	98.76	66.66		.007	...								
1,311	1,126	2,530	32	238	163	6	99.25	70.25		1.23	2.52					72,134	33.60	725	.33
30,325	32,594	63,326	9	19	12	...	99.94	63.16		.01	...								
1,075	790	1,884	2	5,356	2,531	250	97.06	49.56		.10	4.06									56,187	28.24	576	.28
25,054	17,368	42,728	21	3,332	2,347	261	99.63	76.42	.04	7.83									
798	705	1,521	27	115	36	19	97.70	41.86	17.21	18.00	56,718	30.12	551	.29					
32,579	21,829	54,674	101	382	267	18	99.82	69.89	.18	4.71									
4,596	4,036	8,796	88	5,905	2,822	275	98.65	50.12	29.80	.97	4.65	263,424	32.34	2,606	.32				
106,192	119,188	226,134	136	3,736	2,628	279	99.86	76.01		.06	7.46								
1,359	2,236	3,820	257	2,280	984	594	97.86	58.38	29.47	6.17	26.05	109,689	52.00	619	.29				
24,186	29,626	55,960	641	2,655	1,680	601	99.20	52.58		1.12	22.63								
318	584	973	19	276	179	49	97.83	78.65		1.86	17.75					50,279	47.63	457	.43
4,561	15,781	21,679	130	3,643	2,686	589	99.53	87.95		.59	16.16								
2,808	2,121	5,132	162	2,347	1,824	137	91.57	82.53		34.88	2.80									5.83	8,289	41.61	7	.03
10,541	21,016	34,150	1,409	532	374	43	99.08	76.48	33.84	3.92	8.08	40,310	39.38	196	.19				
15,796	7,055	22,881	1,138	503	177	237	97.03	66.54	31.36	4.60	47.11	24,223	32.48	295	.39				
30,822	33,612	66,956	2,985	5,938	3,538	1,060	97.67	72.52	29.79	4.15	17.85	232,800	45.36	1,574	.30				
28,747	45,407	77,639	771	6,298	3,766	1,190	99.29	73.72		.97	18.89								

Number.	District.	Population of district according to the census of 1911.	Average population per square mile.	Average number of vaccinators employed throughout the season.	Total number of persons vaccinated.			Average number of persons vaccinated by each vaccinator.	Total.
					Male.	Female.	Total.		
1	2	3	4	5	6			7	8
Chota Nagpur Division.									
17	Hazaribagh ...	{ By paid Vaccinators ... By licensed Vaccinators ... }	1,288,609	183 { 4 43	528 19,403	573 18,014	1,101 37,417	275 870	1,066 37,417
18	Ranchi ...	{ By paid Vaccinators ... By licensed Vaccinators ... }	1,387,073	194 { 3 50	999 23,545	872 21,591	1,871 45,136	557 902	1,832 44,432
19	Palamau ...	{ By paid Vaccinators ... By licensed Vaccinators ... }	687,710	139 { 3 27	1,416 12,986	990 11,839	2,406 24,825	802 919	792 24,723
20	Manbhum ...	{ By paid Vaccinators ... By licensed Vaccinators ... }	1,547,576	373 { 11 48	3,630 24,478	3,033 21,386	6,663 45,804	606 954	6,382 45,447
21	Singhbhum ...	{ By paid Vaccinators ... By licensed Vaccinators ... }	694,394	178 { 4 20	720 8,887	530 8,065	1,250 16,952	312 847	742 16,542
Total of Chota Nagpur Division.		{ By paid Vaccinators ... By licensed Vaccinators ... }	5,605,362	206 { 25 188	7,293 89,239	5,908 80,895	13,291 170,134	531 904	10,814 168,561
Total of Vaccine Department.		{ By paid Vaccinators ... By licensed Vaccinators ... Total ... }	34,489,846	414 { 198 1,049 1,247	76,479 488,025 564,504	64,292 455,235 519,527	140,771 943,260 1,084,031	711 899 869	123,825 931,549 1,055,374
Total Dispensary Department		...	...	1	100	81	181	181	181
Total Railways		...	...	...	946	521	1,467	...	1,190
Total Cooly Department		...	...	1	565	473	1,038	(a) 1,038	456
Total Jails and Cantonments		...	...	2	10,421	538	10,959	(b) 275	1,871
Grand Total		...	...	1,251	576,536	521,140	1,097,676	877	1,059,072

(a) Balasore only.
(b) Cantonment only.

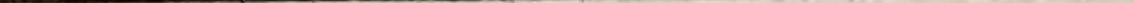
Primary Vaccination.				Re-vaccination.			Percentage of successful cases in which the results were known.		Persons successfully vaccinated per 1,000 of population.	Percentage of unknown cases to total cases.		Average annual number of persons successfully vaccinated during previous five years.		Average annual number of deaths from small-pox during previous five years.	
Successful.				Total.	Successful.	Unknown.	Primary.	Re-vaccination.		Primary.	Re-vaccination.	Number.	Rate per 1,000.	Number.	Rate per 1,000.
Under one year.	Over one and under six years.	Total of all ages.	Unknown.												
9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
469	586	1,060	4	35	11	10	99·81	44·00	} 30·85 {	·37	28·57	} 42,828	33·23	203	·15
24,925	12,330	37,414	2	...	...	...	99·99	...		·005	...				
1,377	408	1,832	...	39	36	3	100·	100·	} 33·95 {	...	7·39	} 47,017	33·89	62	·04
35,043	9,232	44,430	1	704	386	183	99·99	74·07		·002	25·99				
198	396	725	59	1,614	1,341	68	98·90	86·74	} 37·29 {	7·45	4·21	} 26,166	38·05	72	·10
17,446	6,948	24,633	76	102	71	30	99·94	98·61		·30	29·41				
1,75	3,996	5,900	310	281	148	57	97·16	66·07	} 33·78 {	4·85	20·28	} 59,862	38·68	412	·26
25,342	19,902	45,426	10	357	205	12	99·97	59·42		·02	3·36				
325	367	702	6	508	299	24	95·38	61·77	} 25·73 {	·80	4·72	} 21,325	30·71	108	·15
10,492	5,858	16,487	33	410	289	2	99·86	70·83		·19	·48				
4,074	5,753	10,219	379	2,477	1,835	162	92·18	79·26	} 32·80 {	3·50	6·54	} 197,198	35·18	857	·15
113,248	54,270	168,390	122	1,573	951	227	99·97	70·65		·07	14·43				
57,103	56,076	117,384	3,844	16,946	10,466	1,568	97·83	68·05	} 31·04 {	3·09	9·25	} 1,201,758	34·84	8,087	·23
442,602	473,264	926,281	2,373	11,711	7,400	1,701	99·68	73·92		·25	15·37				
499,705	529,340	1,043,665	6,217	28,657	17,836	3,269	99·47	70·37		·58	11·82				
171	6	177	2	...	...	...	98·88	...	...	1·10	...	...	...	...	...
1,014	24	1,038	19	277	184	10	88·64	68·91	...	1·59	3·61	...	...	...	...
60	28	180	296	582	13	560	100·	59·09	...	64·91	96·22	...	...	...	...
346	317	1,486	131	9,088	6,195	762	85·40	74·40	...	7·00	8·38	...	...	...	...
501,296	529,715	1,046,526	6,665	38,604	24,258	4,601	99·44	71·34	...	·62	12·15	...	...	...	...

Summary.

	Total number of persons vaccinated.		Total number of operations performed.		Percentage of successful cases in which the results were known.		Average number of persons vaccinated by each vaccinator.		Number of children successfully vaccinated.		Ratio of successful vaccinations per 1,000 of population.	Total cost of Department.	Average cost of each successful case.
	Primary.	Re-vaccination.	Primary.	Re-vaccination.	Primary.	Re-vaccination.	Vaccinators employed.	Persons vaccinated by each vaccinator.†	Under 1 year.	One and under 6 years.			
1	2	3	4	5	6	7	8	9	10	11	12	13	14
BY SPECIAL STAFF.												Rs. a. p.	Rs. a. p.
Statement (I) ...	10,55,374	28,657	1,055,374	28,657	99.47	70.37	1,247	869	490,705	5,29,340			
BY DISPENSARY STAFF.													
Statement III ...	181	...	181	...	98.88	...	* 1	181	171	6	31.04	1,12,216 4 1	0 1 8
BY OTHER AGENCIES.													
Railways, Cooly Depot, Jails and Cantonments.	3,517	9,947	3,517	9,947	87.30	74.14	† 3	1,403	1,420	369			
Total ...	1,059,072	38,604	1,059,072	38,604	99.44	71.34	1,251	877	5,01,296	5,29,715	31.04	1,12,216 4 1	0 1 8

* Darbhanga only.

† Cooly Department and Cantonment only.



Statement No. II.—Showing the cost of vaccination in the

No.	Circle and district.	European supervising officer.	Expenses										
			Pay.	Native supervising officer.	Pay.	Paid vaccinators.	Pay.	Licensed vaccinators.	Pay.	Clerks.	Pay.	Peons, etc.	Pay.
1	2	3	4	5	6	7	8	9	10	11	12	13	14
	PATNA DIVISION.				Rs. a. p.		Rs. a. p.		Rs. a. p.		Rs. a. p.		Rs. a. p.
1	Patna ... ..	...	...	5	1,770 2 7	16	1,325 1 11	61	...	...	...	1	36 0 0
2	Gaya ... ..	...	...	5	1,811 3 2	8	602 13 0	88	...	...	...	2	144 0 0
3	Shahabad ... ..	...	...	5	2,777 15 4	17	1,126 11 7	76	...	...	...	...	...
	Total of Patna Division ...	...	...	15	6,359 5 1	41	3,141 10 6	225	...	...	...	3	180 0 0
	TIRHUT DIVISION.												
4	Saran ... ..	...	...	4	1,430 0 0	5	660 0 0	87	180 0 0	...	...	...	...
5	Champaran ... ..	...	...	3	1,162 14 9	4	388 0 0	71	90 8 0	...	...	...	...
6	Muzaffarpur ... ..	...	...	4	2,165 12 11	12	809 5 7	75	30 0 0	...	...	...	...
7	Darbhanga ... ..	...	...	4	1,463 5 4	8	580 0 0	83	...	1	60 0 0	...	...
	Total of Tirhut Division ...	...	...	15	6,222 1 0	29	2,437 5 7	321	300 8 0	1	60 0 0	...	...
	BHAGALPUR DIVISION.												
8	Monghyr ... ..	...	...	4	1,480 13 7	7	548 2 2	30	...	...	...	2	108 0 0
9	Bhagalpur ... ..	...	...	5	2,455 10 4	12	1,173 13 4	63	...	...	...	...	...
10	Purnea ... ..	...	...	4	1,447 2 11	11	1,343 13 9	52	...	...	...	...	...
11	Santal Parganas ... ..	...	...	7	2,400 0 0	6	701 0 0	64	...	...	...	...	...
	Total of Bhagalpur Division...	...	...	20	7,783 10 19	36	3,766 13 3	209	...	...	...	2	108 0 0
	ORISSA DIVISION.												
12	Cuttack ... ..	...	...	4	1,365 13 6	11	1,227 11 11	69	...	...	...	...	...
13	Balasore ... ..	...	...	3	1,570 6 5	5	482 4 0	37	20 0 0	...	...	...	...
14	Angul ... ..	...	...	3	2,658 1 0	12	1,650 7 6	...	...	...	...	...	...
15	Puri ... ..	...	...	3	1,204 1 9	19	3,651 9 1	...	...	...	...	...	...
16	Sambalpur ... ..	...	...	3	1,080 0 0	13	1,725 3 6	...	...	...	...	2	50 0 0
	Total of Orissa Division ...	...	...	16	7,878 6 8	70	8,737 4 0	106	20 0 0	...	...	2	50 0 0
	CHOTA NAGPUR DIVISION.												
17	Hazaribagh ... ..	...	...	6	1,335 0 3	4	277 14 5	43	...	...	...	...	...
18	Ranchi ... ..	...	...	5	1,910 0 0	4	564 0 0	50	...	...	...	...	...
19	Palamau ... ..	...	...	3	1,201 1 9	3	281 15 4	27	96 0 0	...	...	...	...
20	Manbhum ... ..	...	...	3	1,211 4 0	11	1,188 1 4	48	...	...	...	...	...
21	Singbhum ... ..	...	...	3	1,245 0 0	4	282 0 0	20	...	...	...	...	...
	Total of Chota Nagpur Division	...	...	20	6,902 6 0	26	2,593 15 1	183	96 0 0	...	...	...	...
	Total of Vaccine Circle ...	...	...	86	35,145 13 7	202	26,677 0 5	1,049	416 8 0	1	60 0 0	7	338 0 0
	ESTABLISHMENT OF THE DEPUTY SANITARY COMMISSIONER, NORTH BIHAR CIRCLE.	...	...	1	5,074 5 2	...	...	...	...	2	946 10 7	2	164 0 7
	Ditto SOUTH BIHAR CIRCLE	...	...	1	4,830 0 0	...	...	...	...	2	960 0 0	3	251 13 9
	Ditto CHOTA NAGPUR AND ORISSA CIRCLE.	...	...	1	6,431 15 0	...	...	...	...	2	892 4 10	2	203 14 9
	Total ...	...	...	3	16,336 4 2	...	...	...	...	6	2,798 15 5	7	619 13 1
	Total of province ...	...	...	89	51,482 1 9	202	20,677 0 5	1,049	416 8 0	7	2,858 15 5	14	957 13 1

Province of Bihar and Orissa during the year 1917-18.

Expenditure					Paid from							Number of all successful vaccinations and re-vaccinations.	Average cost of each successful case.
Total pay of establishment.	Travelling allowance.	Contingencies.		Total cost.	Imperial Fund.	Provincial Fund.	Local Fund.	Municipalities.	Native States.	Total.			
		Cost of lymph.	Other contingencies.										
13	14	15	16	17	18	19	20	21	22	23	24	25	
Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.		Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.		Rs. a. p.	
3,158 4 6	1,241 15 11	...	206 5 6	4,606 9 11	...	3,149 13 6	480 0 0	976 12 5	...	4,606 9 11	68,529	0 1 0	
2,618 0 2	1,324 13 8	...	135 11 9	4,078 9 7	...	3,280 0 10	341 11 0	456 13 9	...	4,078 9 7	62,246	0 1 0	
3,904 10 11	649 11 6	...	127 16 0	4,682 5 5	...	3,533 2 10	480 0 0	669 2 7	...	4,682 5 5	51,858	0 1 5	
9,680 15 7	3,216 9 1	...	470 0 3	13,367 8 11	...	9,963 1 2	1,301 11 0	21,02 12 9	...	13,367 8 11	182,633	0 1 2	
2,270 0 0	1,378 7 7	...	220 2 0	3,868 9 7	...	2,908 7 7	180 0 0	780 2 0	...	3,868 9 7	777,21	0 0 9	
1,641 6 9	1,080 0 7	...	102 3 6	2,823 10 10	...	2,423 7 4	103 12 6	296 7 0	...	2,823 10 10	51,755	0 0 10	
3,005 2 6	400 2 0	...	171 15 0	3,577 3 6	...	2,704 11 11	151 5 7	721 2 0	...	3,577 3 6	85,898	0 0 7	
2,103 5 4	1,142 0 8	...	100 0 0	3,345 6 0	...	2,695 6 0	160 0 0	490 0 0	...	3,345 6 0	93,206	0 0 6	
9,019 14 7	4,000 10 10	...	594 4 6	13,614 13 11	...	10,732 0 10	595 2 1	2,287 11 0	...	13,614 13 11	308,580	0 0 8	
2,136 15 9	1,196 13 10	...	197 0 9	3,530 14 4	...	2,749 10 5	142 2 0	639 1 11	...	3,530 14 4	68,361	0 0 9	
3,629 7 8	527 10 6	...	216 15 10	4,374 2 0	...	3,109 4 10	581 15 4	682 13 10	...	4,374 2 0	68,166	0 1 0	
2,791 0 8	1,221 15 3	...	60 0 0	40,72 15 11	...	2,729 2 2	615 0 0	728 13 0	...	4,072 15 11	49,490	0 1 3	
3,101 0 0	2,297 8 0	...	122 15 10	5,521 7 10	...	4,787 11 10	270 0 0	463 12 0	...	5,521 7 10	56,728	0 1 6	
11,658 8 1	5,243 15 7	...	597 0 5	17,499 8 1	...	13,375 13 3	1,609 1 4	2,514 9 6	...	17,499 8 1	242,745	0 1 1	
2,593 9 5	1,064 0 11	...	151 8 3	3,809 2 7	...	2,524 14 5	599 14 10	684 5 4	...	3,809 2 7	62,177	0 0 11	
2,072 10 5	226 2 0	...	60 0 0	2,358 12 5	...	1,876 8 5	242 4 0	240 0 0	...	2,358 12 5	25,800	0 1 5	
4,308 8 6	985 4 6	...	30 0 0	5,323 13 0	...	5,323 13 0	...	...	...	5,323 13 0	6,956	0 12 2
4,855 10 10	1,006 12 5	...	70 0 0	6,022 7 3	...	2,370 14 2	3,495 9 1	156 0 0	...	6,022 7 3	34,639	0 2 9	
2,855 3 6	730 4 0	...	34 14 6	3,620 16 0	...	1,845 1 0	1,499 3 6	276 1 6	...	3,620 6 0	23,315	0 2 8	
16,685 10 8	4,102 7 10	...	346 6 9	21,34 9 3	...	13,941 3 0	5,833 15 5	1,356 6 10	...	21,134 9 3	152,917	0 2 2	
1,612 14 8	927 3 10	...	107 8 3	2,647 10 9	...	2,367 1 1	30 0 0	250 9 8	...	2,647 10 9	30,761	0 1 0	
2,474 0 0	1,284 4 0	...	85 0 0	3,843 4 0	...	3,279 4 0	...	564 0 0	...	3,843 4 0	47,094	0 1 3	
1,579 1 1	930 0 7	...	80 0 0	2,589 1 8	...	2,211 2 4	158 3 4	219 12 0	...	2,589 1 8	26,898	0 1 7	
2,309 5 4	663 11 11	...	71 0 0	3,134 1 3	...	1,932 12 5	1,017 6 10	183 14 0	...	3,134 1 3	52,289	0 0 11	
1,527 0 0	1,617 9 2	...	61 14 0	3,206 7 2	...	2,912 9 2	84 0 0	208 14 0	...	3,206 7 2	17,872	0 2 10	
9,592 5 1	5,422 13 6	...	405 6 3	15,420 8 10	...	12,702 13 0	1,289 10 2	1,428 1 8	...	15,420 8 10	183,909	0 1 4	
5,6637 6 0	21,933 8 10	...	2,413 2 2	81,037 1 0	...	60,714 15 3	10,632 8 0	9,089 9 9	...	81,037 1 0	10,70,784	0 1 2	
6,185 0 4	3,251 3 1	...	740 1 8	10,176 5 1	...	10,176 5 1	...	...	...	10,176 5 1	...	...
6,051 13 9	3,501 9 0	...	598 0 0	10,141 6 9	...	10,141 6 9	...	...	...	10,141 6 9	...	...
7,528 2 7	3,163 11 2	...	169 9 6	10,831 7 3	...	10,861 7 3	...	...	...	10,861 7 3	...	...
19,755 0 8	9,916 7 3	...	1,507 11 2	31,179 3 1	...	31,179 3 1	...	...	...	31,179 3 1	...	...
76,392 6 8	81,903 0 1	...	3,920 13 4	1,12,216 4 1	...	91,894 2 4	10,632 8 0	9,689 0 9	...	1,12,216 4 1	1,070,784	0 1 8	

B—DISPENSARY VACCINATION.

Statement No. III.—Showing Dispensary Vaccination in the Province of Bihar and Orissa during the year 1917-18.

District.	Number of dispensaries in each district to which a vaccinator is attached.	Average number of vaccinators attached to dispensaries during the year.	Total number of persons vaccinated.	Average number of persons vaccinated by each vaccinator.	Primary vaccination.					Re-vaccination.			Percentage of successful cases in which the results were known.		Percentage of unknown cases to total cases.		
					Total.	Successful.			Unknown.	Total.	Successful.	Unknown.	Primary.	Re-vaccination.	Primary.	Re-vaccination.	
						Under one year.	Over one and under six years.	Total of all ages.									
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
Patna
Gaya
Shahabad
Saran
Champanan
Muzaffarpur
Darbhanga	...	1	1	181	181	181	171	6	177	2	...	...	...	98.88	...	1.10	...
Monghyr
Bhagalpur
Purnea
Santal Parganas
Cuttack
Balasore
Angul
Puri
Sambalpur
Hazaribagh
Ranchi
Palamau
Manbhum
Singhbhum
Total	...	1	1	181	181	181	171	6	177	2	...	...	...	98.88	...	1.10	...

COMPARATIVE STATEMENT No. IV.									
Year	1900	1901	1902	1903	1904	1905	1906	1907	1908
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									
31									
32									
33									
34									
35									
36									
37									
38									
39									
40									
41									
42									
43									
44									
45									
46									
47									
48									
49									
50									
51									
52									
53									
54									
55									
56									
57									
58									
59									
60									
61									
62									
63									
64									
65									
66									
67									
68									
69									
70									
71									
72									
73									
74									
75									
76									
77									
78									
79									
80									
81									
82									
83									
84									
85									
86									
87									
88									
89									
90									
91									
92									
93									
94									
95									
96									
97									
98									
99									
100									

COMPARATIVE STATEMENT No. IV.

Comparative Statement No. IV.—Showing the number of persons primarily vaccinated, and the number of those pe

Establishment.			Persons primarily vaccinated.							
			1908-09		1909-10		1910-11		1911-12	
			Total Number.	Number successfully vaccinated.	Total Number.	Number successfully vaccinated.	Total Number.	Number successfully vaccinated.	Total Number.	Number successfully vaccinated.
1			2	3	4	5	6	7	8	9
Government	...	...	...	...	...	...	...	...	...	...
Municipal	...	...	48,330	44,769	46,047	43,550	46,553	44,671	46,769	44,879
Local Fund	...	...	96,959	97,104	92,291	91,182	97,068	95,561	96,381	95,057
Dispensaries	...	...	689	591	586	472	516	415	384	303
Licensed Vaccinators	...	...	1,005,512	994,418	1,053,044	1,052,100	1,118,587	1,109,896	1,135,713	1,128,318
Total	...	...	1,151,490	1,136,882	1,191,968	1,187,304	1,262,724	1,248,543	1,279,247	1,268,497

sons who were successfully vaccinated in the Province of Bihar and Orissa in each of the undermentioned official years.

vaccinated.											
1912-13		1913-14		1914-15		1915-16		1916-17		1917-18	
Total Number.	Number successfully vaccinated.	Total Number.	Number successfully vaccinated.	Total Number.	Number successfully vaccinated.	Total Number.	Number successfully vaccinated.	Total Number.	Number successfully vaccinated.	Total Number.	Number successfully vaccinated.
10	11	12	13	14	15	16	17	18	19	20	21
...	...	...	...	649	515	10,277	10,046	3,963	3,441	6,984	6,050
43,379	42,311	44,167	42,480	47,235	45,310	43,099	41,661	38,645	37,226	37,586	36,107
86,551	85,965	82,592	81,790	76,264	75,266	94,056	84,636	80,353	73,103	82,772	77,911
188	185	186	186	178	176	285	215	202	202	181	177
1,133,310	1,126,927	1,149,467	1,143,922	1,114,753	1,109,554	1,065,023	1,059,266	922,991	913,264	931,549	926,281
...
1,263,428	1,255,388	1,276,412	1,268,368	1,239,079	1,230,821	1,212,740	1,195,824	1,046,154	1,027,236	1,059,072	1,046,526

Statement No. V.—Showing particulars of vaccination

District.	Total number of persons vaccinated.		Total number inspected—								Percentage of	
			By Deputy Sanitary Commissioners or Civil Surgeons.				Native Superintendents or other Inspecting Officers.				By Deputy Sanitary Civil	
			Deputy Sanitary Commissioners.		Civil Surgeons.		District Inspectors.		Sub-Inspectors.		Deputy Sanitary Commissioners.	
	Primary.	Re-vaccination.	Primary.	Re-vaccination.	Primary.	Re-vaccination.	Primary.	Re-vaccination.	Primary.	Re-vaccination.	Primary.	Re-vaccination.
1	2	3	4	5	6	7	8	9	10	11	12	13
Patna ...	69,173	694	10,426	...	762	511	24,518	...	29,210	...	15'08	...
Gaya ...	61,353	1,524	19,868	...	1,037	420	14,509	10	27,142	412	32'38	...
Shahabad ...	50,639	2,057	7,194	...	4,217	1,295	8,575	...	18,239	1,175	14'20	...
Saran ...	79,068	636	4,683	...	7,897	632	18,180	...	33,024	...	5'92	...
Champaran ...	51,641	706	4,158	...	5,398	600	6,809	...	13,754	...	8'05	...
Muzaffarpur ...	85,995	1,002	6,634	...	10,904	714	2,288	...	18,996	19	7'48	...
Darbhanga ...	93,380	271	10,276	...	4,104	200	22,552	8	41,669	...	11'00	...
Monghyr ...	68,341	209	6,207	...	3,786	...	14,898	36	17,655	15	9'08	...
Bhagalpur ...	66,041	2,479	6,909	...	8,195	...	18,471	78	36,657	30	10'46	...
Purnea ...	44,838	8,688	386	...	476	...	4,864	2,817	11,139	2,820	'86	...
Santal Parganas ...	56,477	826	7,412	...	2,558	112	5,123	...	19,582	296	8'34	...
Cuttack ...	61,415	5,252	6,506	...	2,869	103	8,781	174	20,296	...	10'59	...
Balasore ...	23,219	4,781	4,326	...	1,795	311	5,950	227	7,633	532	18'62	...
Angul ...	5,766	,347	5,009	...	453	...	2,227	168	1,929	321	66'87	...
Puri ...	35,992	567	4,600	...	448	34	10,828	...	12,699	63	12'78	...
Sambalpur ...	24,720	873	2,333	...	3,378	319	10,216	24	11,915	...	9'43	...
Hazaribagh ...	39,650	477	11,812	...	803	...	7,474	...	11,878	...	29'79	...
Ranchi ...	46,657	776	12,048	...	3,681	...	14,868	...	20,156	...	25'82	...
Palamau ...	25,585	1,807	12,723	...	289	88	9,849	...	10,428	40	40'72	...
Manbhum ...	51,829	1,559	5,825	...	799	912	4,333	...	10,384	...	11'23	...
Singhbhum ...	17,284	1,082	6,121	...	1,845	134	6,133	...	9,017	369	35'41	...
TOTAL ...	1,059,072	38,604	155,456	...	65,694	6,385	221,446	3,572	383,402	6,092	14'67	...

verified by Inspecting Officers during the year 1917-18.

inspection to total number vaccinated.						Percentage of cases found successful to total number inspected.								Percentage of successful cases reported by vaccinators.	
Commissioners or Surgeons.		By Native Superintendents or other Inspecting Officers.				By Deputy Sanitary Commissioners or Civil Surgeons.				By Native Superintendents or other Inspecting Officers.					
Civil Surgeons.		District Inspectors.		Sub-Inspectors.		Deputy Sanitary Commissioners.		Civil Surgeons.		District Inspectors.		Sub-Inspectors.			
Primary.	Re-vaccination.	Primary.	Re-vaccination.	Primary.	Re-vaccination.	Primary.	Re-vaccination.	Primary.	Re-vaccination.	Primary.	Re-vaccination.	Primary.	Re-vaccination.		
14	15	16	17	18	19	20	21	22	23	24	25	26	27			28	29
1'10	73'67	35'44	...	42'21	...	98'78	...	98'28	75'53	98'16	...	98'23	...	99'05	70'41
1'69	27'55	23'64	'65	44'23	27'69	96'32	...	99'90	96'66	96'92	60'0	94'69	98'06	99'30	85'30
8'32	62'95	16'93	...	36'01	57'12	93'25	...	98'74	96'06	96'57	...	98'56	94'72	98'98	84'06
9'98	99'37	22'86	...	41'76	...	99'99	...	98'70	55'22	98'69	...	97'79	...	97'99	51'72
10'45	84'98	13'18	...	26'63	...	96'53	...	99'61	39'33	98'88	...	99'11	...	99'66	40'36
12'67	71'25	9'63	...	22'08	1'89	97'27	...	99'02	45'50	88'24	...	85'05	36'84	99'34	49'35
4'39	73'80	24'15	2'95	49'97	...	...	...	99'70	37'50	98'05	100'0	98'95	...	99'52	40'73
5'52	...	21'79	17'22	25'83	7'17	99'35	...	99'39	...	99'51	44'44	98'46	66'63	99'90	44'97
12'40	...	27'96	3'14	55'50	1'24	98'33	...	99'87	...	96'36	53'24	96'45	56'66	99'85	68'09
1'06	...	10'84	32'42	24'84	32'46	...	...	98'94	...	99'26	70'43	98'79	62'30	99'49	53'12
'52	13'55	9'07	...	34'67	35'83	98'56	...	99'26	55'35	98'80	...	98'66	63'51	99'55	61'13
4'67	1'96	14'29	3'31	33'04	...	70'62	...	99'75	79'61	98'38	18'96	97'47	...	99'10	55'24
7'73	6'50	25'62	4'74	32'87	11'10	55'56	...	98'98	92'60	92'08	81'49	98'02	84'96	99'46	88'12
7'85	...	38'62	8'43	33'45	13'67	77'45	...	96'02	...	94'38	77'77	95'48	84'42	89'00	77'71
1'24	5'99	30'08	...	35'23	11'11	83'13	...	96'87	82'35	98'65	...	97'73	66'66	95'12	70'89
13'66	36'54	41'31	2'74	48'18	...	26'06	...	94'73	80'87	94'98	91'66	95'09	...	95'55	52'23
2'02	...	18'85	...	29'95	...	94'17	...	99'00	...	99'29	...	99'57	...	99'61	36'98
7'88	...	31'87	...	43'11	...	80'10	...	98'98	...	97'09	...	99'55	...	98'35	56'57
1'12	4'87	38'49	...	40'75	2'17	98'27	...	96'88	71'59	99'18	...	93'41	82'50	99'37	82'14
1'54	58'84	8'36	...	20'03	...	69'11	...	100'00	66'88	99'14	...	99'32	...	99'91	62'12
10'67	12'38	35'50	...	52'17	34'10	73'64	...	99'78	70'89	99'43	...	99'22	69'64	99'50	63'30
6'20	16'53	20'90	9'25	36'20	15'78	89'69	...	98'87	70'87	97'50	68'42	97'00	74'90	98'31	61'79

Statement No. VI.--Showing side by side the ratios, per 1,000 of population, of Deaths from

District.	1908-09		1909-10		1910-11		1911-12	
	Ratio of deaths from small-pox.	Number of successful vaccinations.	Ratio of deaths from small-pox.	Number of successful vaccinations.	Ratio of deaths from small-pox.	Number of successful vaccinations.	Ratio of deaths from small-pox.	Number of successful vaccinations.
1	2	3	4	5	6	7	8	9
Patna ...	2·94	52,570	1·23	51,589	·30	45,665	·09	48,687
Gaya ...	2·68	72,395	·62	74,725	·07	68,104	·07	69,923
Shahabad	1·76	53,759	·67	46,311	·04	39,890	·02	36,809
Saran ...	·96	74,035	·84	76,930	·07	86,741	·03	83,221
Champaran	·80	56,148	·44	63,172	·02	59,887	·03	60,354
Muzaffarpur	·23	101,612	·22	98,808	·06	101,395	·05	102,535
Darbhanga	·13	75,833	29	83,005	·07	84,025	·06	83,343
Monghyr	·61	78,958	·30	79,069	·11	85,497	·09	89,123
Bhagalpur	·15	71,328	·24	77,682	·26	74,438	·43	80,294
Purnea	·08	50,937	·36	61,698	·39	63,167	·24	59,409
Santal Parganas	·71	65,509	·36	67,015	·07	67,446	·08	61,909
Cuttack	·28	107,484	·12	134,160	·007	139,487	·002	153,747
Balasore	·64	35,811	·56	44,340	·41	56,052	·19	63,287
Angul ...	...	9,022	...	7,602	...	9,353	...	8,207
Puri ...	·83	53,920	·16	52,438	·007	53,738	·006	53,619
Sambalpur	·17	28,265	·04	27,124	·08	33,399	...	33,153
Hazaribagh	1·27	42,294	·42	42,659	·01	50,075	·006	46,544
Ranchi	1·48	44,656	·81	46,968	·07	57,541	·02	48,913
Palamau	1·19	27,936	1·42	31,133	·11	21,059	·008	24,782
Manbhum	·46	62,937	·21	58,160	·01	60,086	·0006	60,420
Singhbhum	·22	22,721	·42	17,409	·08	26,593	·004	22,841
Total	·83	1,189,184	·45	1,241,997	·10	1,283,638	·08	1,288,620

Small-pox and the number of successful vaccinations during the 10 years ending 1917-18.

1912-13		1913-14		1914-15		1915-16		1916-17		1917-18	
Ratio of deaths from small-pox.	Number of successful vaccinations.	Ratio of deaths from small-pox.	Number of successful vaccinations.	Ratio of deaths from small-pox.	Number of successful vaccinations.	Ratio of deaths from small-pox.	Number of successful vaccinations.	Ratio of deaths from small-pox.	Number of successful vaccinations.	Ratio of deaths from small-pox.	Number of successful vaccinations.
10	11	12	13	14	15	16	17	18	19	20	21
·07	48,768	·17	48,480	·48	57,665	·71	68,438	·28	67,870	·15	68,529
·008	66,965	·03	67,817	·10	65,855	·68	75,641	·37	56,139	·18	62,246
·006	47,086	·09	53,812	·32	62,079	·45	65,016	·26	51,176	·10	51,858
·006	85,339	·06	81,699	·06	80,729	·15	79,608	·27	74,895	·16	77,721
·07	55,486	·02	63,100	·10	64,146	·14	68,255	·07	49,091	·11	51,755
·04	101,405	·01	103,052	·09	105,292	·24	104,624	·20	88,702	·09	85,898
·01	93,546	·06	93,735	·24	97,760	·41	95,237	·28	96,020	·07	93,206
·08	84,475	·48	89,024	·46	89,749	·42	87,999	·17	67,229	·10	68,361
·41	77,274	·31	75,244	·35	75,831	·38	74,532	·22	66,899	·22	68,166
·14	56,916	·22	60,587	·30	58,496	·38	51,206	·33	53,018	·64	49,490
·19	60,236	·27	64,815	·18	53,182	·37	57,558	·43	46,826	·14	56,728
·01	137,175	·01	134,227	·06	113,297	·69	89,925	·46	73,415	·81	62,177
·006	68,271	·11	69,059	·90	53,281	·90	38,609	·24	22,178	·03	25,800
...	5,906	...	7,945	...	7,680	·01	9,686	·15	9,226	·01	6,956
·02	55,642	·07	47,269	·02	33,820	·30	37,595	·52	29,228	·26	34,639
·04	25,955	·05	25,063	·02	27,561	·75	22,606	1·09	19,938	·24	23,343
·02	46,150	·02	51,777	·03	48,299	·49	46,709	·19	42,148	·07	39,761
·004	51,096	·01	49,989	·03	50,958	·12	52,111	·05	46,667	·03	47,094
...	23,683	·07	21,459	·10	28,327	·17	31,808	·15	25,542	·06	26,893
·005	61,191	·02	61,316	·43	73,369	·63	54,056	·23	49,379	·02	62,289
·05	20,254	·09	23,496	·45	25,909	·28	19,526	·12	17,429	·09	17,872
·06	1,270,859	·11	1,292,965	·22	1,273,285	·42	1,230,745	·28	1,053,015	·19	1,070,784

Statement No. VII.—Showing the protection afforded to infants in each town in the Province of Bihar and Orissa during the year 1917-18.

District.	Towns.	Number of births during the year ending 31st March 1918.	Number of deaths amongst infants under one year during the year ending 31st March 1918.	Number of successful vaccinations amongst infants under one year during the year ending 31st March 1918.	Date of extension of Vaccination Act to town.
1	2	3	4	5	6
Patna	Patna ...	3,328	644	2,278	1st October 1884.
	Bihar ...	1,154	210	872	1st April 1887.
	Dinapur ...	1,002	202	767	28th January 1891.
	Barh ...	362	89	248	1st April 1887.
	Khagole ...	222	26	148	12th July 1910.
	Total ...	6,068	1,171	4,313	
Gaya	Gaya ...	2,484	833	884	1st January 1883.
	Tikari ...	284	47	72	3rd January 1891.
	Daudnagar ...	274	50	139	Ditto.
	Total ...	3,042	930	1,095	
Shahabad	Arrah ...	1,525	373	1,328	20th July 1885.
	Buxar ...	445	91	368	1st April 1887.
	Dumraon ...	526	90	136	Ditto.
	Jagadispur ...	329	90	267	20th December 1890.
	Sassaram ...	996	196	709	1st April 1887.
	Bhabhua ...	166	39	155	Ditto.
	Total ...	3,987	879	2,963	
Total of Patna Division.		13,097	2,980	8,371	
Saran	Chapra ...	1,614	151	694	1st April 1887.
	Revelganj ...	431	91	279	12th December 1890.
	Siwan ...	567	103	262	1st April 1887.
	Total ...	2,612	345	1,235	
Champaran	Motihari ...	457	95	256	1st April 1887.
	Bettiah ...	929	240	441	Ditto.
	Total ...	1,386	335	697	

Statement No. VII.—Showing the protection afforded to infants in each town in the Province of Bihar and Orissa during the year 1917-18—contd.

District.	Towns.	Number of births during the year ending 31st March 1918.	Number of deaths amongst infants under one year during the year ending 31st March 1918.	Number of successful vaccinations amongst infants under one year during the year ending 31st March 1918.	Date of extension of Vaccination Act to town.
1	2	3	4	5	6
Muzaffarpur	Muzaffarpur ...	1,301	280	998	1st January 1886.
	Sitamarhi ...	391	78	225	1st April 1887.
	Hajipur ...	739	163	391	1st May 1890.
	Lalganj ...	343	65	266	1st April 1887.
	Total ...	2,774	586	1,880	
Darbhanga	Darbhanga ...	2,265	433	736	24th May 1884.
	Roserha ...	295	73	116	3rd January 1891.
	Samastipur ...	258	55	74	25th July 1910.
	Madhubani ...	581	85	175	1st April 1887.
	Total ...	3,399	646	1,104	
	Total of Tirhut Division.	10,171	1,913	4,926	
Monghyr	Monghyr ...	1,882	354	495	15th November 1882.
	Jamalpur ...	955	206	500	Ditto.
	Total ...	2,837	560	955	
Bhagalpur	Bhagalpur ...	1,683	352	684	15th February 1884 ; withdrawn on 16th October 1895 ; re-extended on 18th August 1898.
	Colgong ...	145	38	38	Ditto ; re-extended on 19th December 1901.
	Total ...	1,828	390	722	
Purnea	Purnea ...	410	80	230	1st July 1887.
	Kishanganj ...	205	22	118	12th November 1892.
	Katihar ...	347	33	212	8th August 1910.
	Forbesganj ...	113	8	87	9th August 1912.
	Total ...	1,075	143	647	

Statement No. VII.—Showing the protection afforded to infants in each town in the Province of Bihar and Orissa during the year 1917-18—contd.

District.	Towns.	Number of births during the year ending 31st March 1918.	Number of deaths amongst infants under one year during the year ending 31st March 1918.	Number of successful vaccinations amongst infants under one year during the year ending 31st March 1918.	Date of extension of Vaccination Act to town.
1	2	3	4	5	6
Santal Parganas ...	Sahibganj ...	510	121	456	1st May 1884.
	Deoghar ...	295	63	104	Ditto.
	Dumka ...	165	37	123	Notifications, dated the 9th April 1884, and 3rd August 1910.
	Madhupur ...	253	46	71	22nd August 1910.
	Total ...	1,223	267	754	
Total of Bhagalpur Division.		6,963	1,360	3,078	
Cuttack ...	Cuttack ...	1,275	267	779	1st September 1884.
	Kendrapara ...	467	131	199	7th February 1888.
	Jajpur ...	366	81	55	Ditto.
	Total ...	2,108	479	1,033	
Balasore ...	Balasore ...	557	145	154	7th February 1888.
Puri ...	Puri ...	696	263	279	Ditto.
Sambalpur ...	Sambalpur ...	461	110	228	7th March 1895.
Total of Orissa Division.		3,822	997	1,694	
Hazaribagh ...	Hazaribagh ...	510	71	165	1st January 1885.
	Chatra ...	256	44	166	1st August 1885.
	Giridih ...	261	32	99	8th September 1910.
	Total ...	1,057	147	430	
Ranchi ...	Ranchi ...	1,344	163	1,169	1st April 1887.
	Lohardaga ...	149	14	208	25th June 1892.
	Total ...	1,493	177	1,377	

Statement No. VII.—Showing the protection afforded to infants in each town in the Province of Bihar and Orissa during the year 1917-18—concl'd.

District.		Towns.	Number of births during the year ending 31st March 1918.	Number of deaths amongst infants under one year during the year ending 31st March 1918.	Number of successful vaccinations amongst infants under one year during the year ending 31st March 1918.	Date of extension of Vaccination Act to town.
1		2	3	4	5	6
Palamau	...	Daltonganj	277	55	94	9th October 1890.
		Purulia	379	59	463	1st January 1887.
Manbhum	...	Raghunathpur	176	44	77	9th February 1894.
		Jhalda	165	24	74	9th July 1892.
		Total	720	127	608	
Singhbhum	...	Chaibassa	292	36	218	20th June 1892.
		Total of Chota Nagpur Division.	3,849	542	2,727	
		Total for the Province	37,875	7,792	20,786	

ANNEXURE II.

Provincial Statement.—Showing the different kinds of lymph

District.	Primary vaccination.											
	Direct from the calf.					With lanoline or glycerine lymph.					Arm-to-arm	
	Total.	Successful.	Unsuccessful.	Unknown.	Percentage of successful cases.	Total.	Successful.	Unsuccessful.	Unknown.	Percentage of successful cases.	Total.	Successful.
1	2	3	4	5	6	7	8	9	10	11	12	13
Patna	69,173	68,084	649	440	98.42	...	...
Gaya	61,353	60,945	282	126	99.33	...	...
Shahabad	50,639	50,128	439	72	98.99	...	...
Saran	79,003	77,370	631	1,067	97.85	...	...
Champaran	51,641	51,470	121	50	99.66	...	...
Muzaffarpur	85,995	85,431	496	68	99.34	...	...
Darbhanga	93,380	93,099	256	25	99.69	...	...
Nonghyr	68,341	68,267	42	32	99.89	...	...
Bhagalpur	66,041	65,940	60	41	99.84	...	...
Purnea	44,838	44,612	203	23	99.49	...	...
Santal Parganas	56,477	56,223	126	128	99.55	...	...
Cuttack	61,415	59,970	543	902	97.64	...	...
Balasore	23,219	22,652	122	415	97.55	...	...
Angul	5,766	5,132	472	162	89.00	...	...
Puri	35,992	34,237	331	1,424	95.12	...	...
Sambalpur	24,729	22,889	701	1,159	92.55	...	...
Hazaribagh	39,650	39,489	136	25	99.59	...	...
Ranchi	46,657	46,655	1	1	99.99	...	...
Palamau	25,585	25,418	31	136	99.35	...	...
Manbhum	51,829	51,326	183	320	99.02	...	...
Singhbhum	17,284	17,189	56	39	99.45	...	...
TOTAL	1,059,072	1,046,526	5,881	6,665	98.43	...	...

II.

used and their rates of success during the year 1917-18.

			Revaccination.														
vaccination.			Direct from the calf.					With lanoline or glycerine lymph.					Arm-to-arm vaccination.				
Unsuccessful.	Unknown.	Percentage of successful cases.	Total.	Successful.	Unsuccessful.	Unknown.	Percentage of successful cases.	Total.	Successful.	Unsuccessful.	Unknown.	Percentage of successful cases.	Total.	Successful.	Unsuccessful.	Unknown.	Percentage of successful cases.
14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
...	694	445	187	62	64.10	...	...	...	...	...
...	1,524	1,301	171	52	85.36	...	...	...	...	...
...	2,057	1,730	221	106	84.10	...	...	...	...	...
...	636	351	185	100	50.00	...	...	...	...	...
...	706	285	303	118	40.36	...	...	...	...	...
...	1,002	467	386	149	46.60	...	...	...	...	...
...	271	107	131	33	39.51	...	...	...	...	...
...	209	94	115	...	44.97	...	...	...	...	...
...	2,479	2,226	233	20	89.79	...	...	...	...	...
...	8,688	4,878	3,299	511	56.14	...	...	...	...	...
...	826	505	262	59	61.13	...	...	...	...	...
...	5,252	2,207	1,788	1,257	42.02	...	...	...	...	...
...	4,781	3,148	424	1,209	65.84	...	...	...	...	...
...	2,347	1,824	386	137	56.41	...	...	...	...	...
...	567	402	121	44	70.89	...	...	...	...	...
...	873	456	165	252	52.23	...	...	...	...	...
...	477	272	185	20	57.02	...	...	...	...	...
...	776	439	144	193	57.31	...	...	...	...	...
...	1,807	1,475	231	101	81.63	...	...	...	...	...
...	1,550	963	465	122	62.12	...	...	...	...	...
...	1,082	683	343	56	63.12	...	...	...	...	...
...	38,604	24,253	9,745	4,601	62.84	...	...	...	...	...

